SOHIO ALASKA PETROLEUM COMPANY

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July 24, 1985

Mr. Mike Johnston
Chief, Air Operations Section
Region X
1200 Sixth Avenue
Seattle, Washington 98101

Mr. Doug Lowery
Regional Supervisor
Alaska Department of
Environmental Conservation
Pouch 1601
Fairbanks, Alaska 99707

Subject: 1985 Compliance Test Plan
Prudhoe Bay Unit (PSD-X81-01 and PSD-X81-13)

Dear Sirs:

Attached for your approval is the 1985 air compliance test plan for the Prudhoe Bay Unit Oil Field Facilities. The tests, scheduled for the week of ~~September~~ August 26th, will be done on the following turbine and heaters units:

1 - 7800 HP Sulzer turbine located at GC-2 for PWX. delayed
1 - 320.0 MM Btu/hr heater located at SIPW for Waterflood. Sept 2, 1985
1 - 29,000 HP Cooper Rolls turbine located at SIPE for Waterflood.
1 - 185.0 MM Btu/hr heater located at SIPE for Waterflood.
1 - 67.5 MM Btu/hr heater located at SIPE for Waterflood.

If we can provide you with any further information on this plan please contact us (Lynn (907)564-5026 or Jim (907)263-4307).

Sincerely,

Lynn Billington
Sohio Alaska Petroleum Co.

Jim Ives
Arco Alaska Inc.

Attachment

2665a/lmb

cc: R. Nye-EPA, Seattle
J. Coutts-ADEC, Fairbanks
K. Pazero-EPA, Juneau
L. Verrelli-ADEC, Juneau

bc: E. Dippe
D. F. Dias w/o
R. V. Shafer w/o
File 121

PETRO CHEM ENVIRONMENTAL SERVICES

SOURCE TEST PLAN

I. **Client:**

Prudoe Bay Unit Owners Represented By:

SOHIO ALASKA PETROLEUM COMPANY
700 East Benson Blvd.
P.O. Box 6612
Anchorage, Alaska 99502-0612

Attention: Lynn Billington or Erica Dippe
(907) 564-5026

II. **Testing Firm:**

Petro-Chem Environmental Services
3207 Antonino Avenue
P.O. Box 5126
Bakersfield, CA 93388

Attention: Leslie A. Johnson
(805) 327-7300

III. **Units To Be Tested:**

1. 7800 Hp Sulzer Turbine
2. 29,000 Hp Cooper Rolls Royce Turbine
3. 67.5 MMBtu/hr Heater
4. 320.0 MMBtu/hr Heater
5. 185.0 MMBtu/hr Heater

Permit PSD X80-09 and PSD X81-01

IV. **Procedures:**

Determination of NOx and O_2 concentrations and emissions from five (5) sources located in Prudoe Bay Alaska. Additional monitoring for carbon monoxide (CO) will be done on both turbines. Monitoring of NOx, CO and O_2 will be by continuous monitoring analyzers (see attachment A) and documented with an analog strip chart recorder. Three, forty minute test runs will be conducted at each unit with zero and span calibrations before and after each test. During each test the units operating parameters will be monitored to document its load capacity. An oxygen traverse will be performed on all turbines and heaters to determine test run sampling points. If upon completion of the oxygen traverse, no deviation is found, single point sampling will be done on the three heaters.

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Procedures Cont.

Volume flows and operating conditions of each unit will be calculated using the process conditions which are documented, and will be made available, by the process engineer. A gas sample will be taken for each unit and analyzed by Sohio's Laboratory. If the available information does not satisfy EPA Region X DEC, EPA Method 2, 3, and 4, will be performed to document volume flows.

The analyzers which are to be used for testing are:

Thermo-Electron, Model 10;
Chemiluminescent NO/NOx Analyzer
Serial No: 10A-R-17380

Teledyne Instruments, Model 320-AX
Fuel Cell O_2 Analyzer
Serial No: 50840

Thermo-Electron, Model 48;
NIRD: Gas Filter Correlation
Serial No: 48-17394-169

Testing Dates: August 27, through 30th, 1985

Attachment A

CONTINUOUS EMISSION MONITORING SYSTEM (CEMS)

Reference: BAAQMD, Manual of Procedures; ST-13A, St-19A, Jan 1982 State of California, Air Resources Board, Test Methods 1-100, June 1979 CRF 40 parts 53 to 80, Test Methods 7E and 20, 1985.

INSTRUMENTATION SUMMARY:

A constant sample of flue gas was extracted, dried, filtered, and delivered to an instrument manifold system for distribution to one or more analyzers. Instrument results are recorded on an analog strip chart recorder. System calibration checks are performed at the beginning and end of each day as well as calibration check at the beginning and end of each test run. Final data reduction includes zero and calibration drift corrections.

SAMPLE CONDITIONING SYSTEM:

Consists of a borosilicate glass tube or 316 grade stainless steel probe fitted with a cindered stainless steel or pyrex glass wool particulate filter. The probe is fitted with a teflon (TFE) sample line which connects to a water condensation system located at the sources. The condensation system consists of three 500 ml glass impingers connected in a series, immersed in an ice bath. The gas is delivered to the instrument van with a teflon line (3/8"O.D.) through an in line Balston particulate filter drawn by a teflon coated diaphram pump. The sample system is leak checked prior to sampling by plugging the end of the sample probe and adjusting the sample pump to it's maximum rate (approximately 22" Hg). The manifold is bypassed and the leak rate monitored through a gas meter or low range flow meter.

MANIFOLD SYSTEM:

Sample gas is delivered to each analyzer through a five (5) way valve and regulated with a needle valve flowmeter. Manifold pressure is controlled by a back pressure regulator which is typically set at three (3) psi. Zero gas (N_2) and calibration gases are delivered to the analyzers using the same five-way valve and flowmeter. All manifold parts are glass, stainless steel, or teflon materials.

CALIBRATION PROCEDURES:

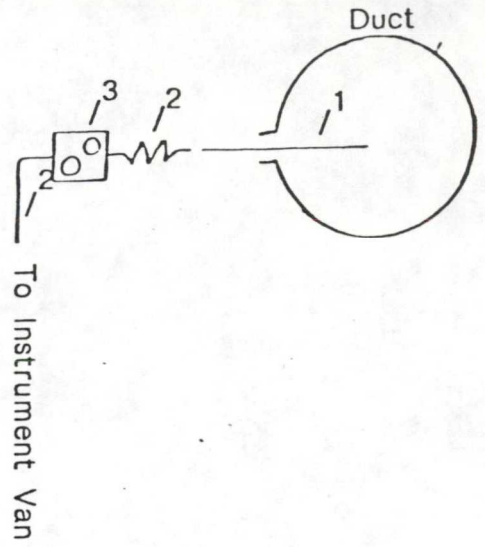
A. **System Calibration Procedures:**
System calibration checks are performed at the beginning and end of each test day to insure against sample system leaks or contamination. Calibration gas is introduced at the sample probe tip at a normal sample rate and vacuum, the final instrument value must be within ±5% of the calibration gas value.

B. **Manifold Calibration:**
Instrument calibration checks are performed and adjustments made before and after each test run. Each analyzer is checked with a zero grade nitrogen gas for a zero baseline and then with a calibration gas similar to the expected sample concentration (60-90% of full scale). Calibration gases used in both manifold and system calibrations are with EPA protocol No. 1 gas (traceable to National Bureau of Standards SRM,) or with gases recently analyzed by EPA Reference Methods. All zero and calibration checks are documented and noted on the recorder strip charts.

ANALOG STRIP CHART DATA REDUCTION:

Analog recordings were averaged of time increments as shown on the data pages (typically 5, 10, or 20 minute increments). Data for each incriment was recorded at an average percent of full scale. The readings were then compared with the zero and calibration readings for calculation of the average concentration for each time increment. Any deviation of the zero and calibration readings from the start to the end of a test period was corrected by calculating apparent zero and calibration readings for the mid-point or each time incriment. The average concentrations were then calculated from the sample readings and the apparent zero and span readings.

PNEUMATIC DIAGRAM



1) 316 Stainless Steel Probe
2) Teflon Sample Line
3) Sample Gas Conditioner
4) Filter
5) Teflon Coated Diaphram Pump
6) By-Pass Control Valve
7) Sample Flowmeter
8) Back-Pressure Regulator
9) 5-Way Gas Selection Valve
10) Instrument Flowmeter
11) Metering Valves